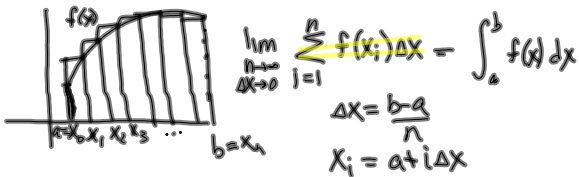


Review 13 Riemann Sums, Trapezoidal Rule

LRAM, RRAM, mRAM



- LRAM: leave off the last one
- RRAM: leave off first
- mRAM: use every other one
 Δx is twice as big

Trapezoidal Rule

$$T = \frac{h}{2} [y_0 + 2y_1 + 2y_2 + \dots + y_n]$$

$$h = \frac{b-a}{n} = \Delta x \quad \text{must have same } \Delta x \text{'s (evenly spaced)}$$

not evenly spaced?

one trap at a time, add them up

$$\frac{1}{2}(b_1 + b_2)h = \frac{1}{2}(y_1 + y_2)\Delta x$$

$$\text{Trap} = \frac{\text{LRAM} + \text{RRAM}}{2}$$

Mar 20-9:49 AM

Mar 20-10:00 AM

Ex 1 remote control car

time	0	1	2	3	4	5	6	7	8	9	10
velocity	0	6	10	16	14	12	18	22	12	4	2

Estimate the distance traveled using

- a) LRAM $[0+6+10+16+\dots+4] \cdot 1 = 114$
- b) RRAM $[6+10+\dots+2] \cdot 1 = 116$
- c) mRAM $[6+16+12+22+4] \cdot 2 = 120$
- d) Trap $\frac{114+116}{2} = 115$

Ex 2

time (hr)	0	1	2	3	4	5
Temp °F	76	78	81	82	80	79

Estimate the average Temp on $[0, 5]$ using Trap.

$$\bar{y} \approx \frac{1}{5} \cdot \frac{1}{2} [76 + 2 \cdot 78 + 2 \cdot 81 + 2 \cdot 82 + 2 \cdot 80 + 79]$$

$$\bar{y} = \frac{1}{b-a} \int_a^b f(x) dx \quad 79.7$$

Mar 20-10:04 AM

Mar 20-10:14 AM